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## Case report

# Infectious aneurysm of the ascending aorta – Successful conservative treatment in a high-risk patient

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## ABSTRACT

Infectious aortic aneurysm is a rare disease requiring early and comprehensive management to prevent the development of serious complications. While surgical repair is still the gold standard, an endovascular approach is an alternative for some patients. Conservative management is traditionally associated with the worst prognosis. We report a case of an infectious aneurysm of the ascending aorta with an atypical clinical manifestation and a complicated diagnostic process, which resulted in successful comprehensive conservative management of a high-risk patient who rejected radical surgical treatment.

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## Case report

A 76-year-old Caucasian man with serious co-morbidities with recurrent septicaemia was admitted to a district general hospital in October 2012 and January 2013 and again in March 2013 to our department. *Pseudomonas aeruginosa* was repeatedly revealed by blood cultures, with no clinical evidence of any focal infection and excellent response to antibiotic treatment. Transoesophageal echocardiography performed during the last hospital stay showed aortic valve vegetation

(Fig. 1). Conservative treatment of the infective endocarditis was initiated with a prolonged antibiotic regime and an aggressive management of a possible dental focal infection source.

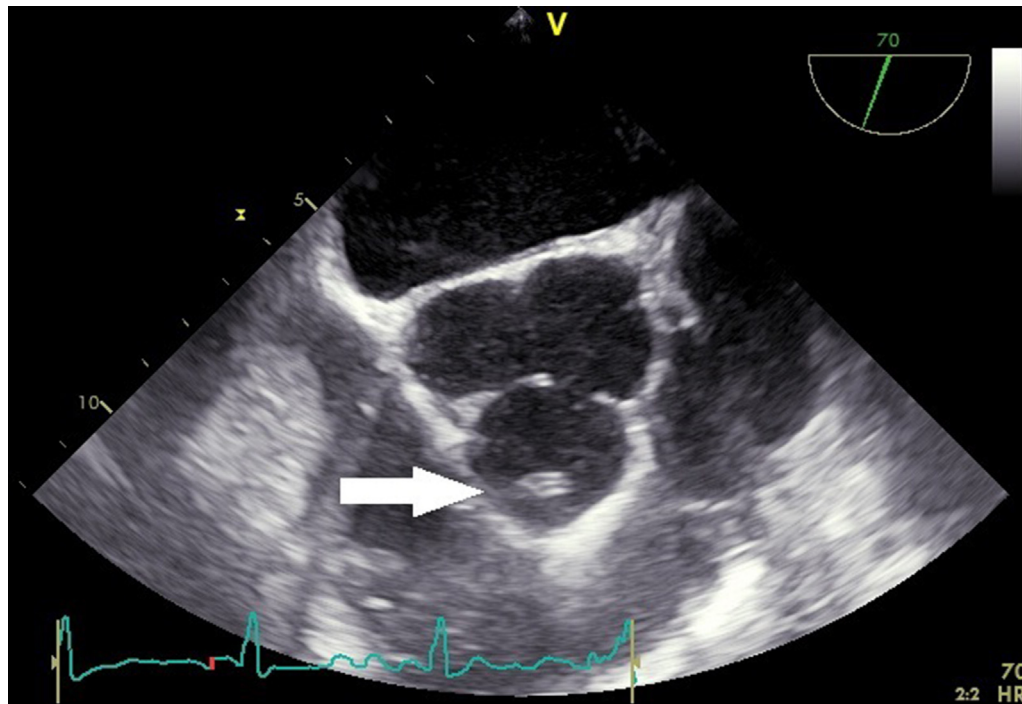
The response to treatment was excellent; however, fever recurred shortly after termination of antibiotic therapy in 06/2013. *P. aeruginosa* was again detected in blood culture and *Klebsiella pneumoniae* in sputum, with rapid response to imipenem and ciprofloxacin therapy. A repeated complex diagnostic evaluation did not find any source of infection. In August 2013, positron emission tomography/computed tomography scanning with <sup>18</sup>F-fluorodeoxyglucose (FDG-PET/CT)

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**Fig. 1 – Cross-sectional view of the aorta obtained by transoesophageal echocardiography showing an aortic valve vegetation within the right coronary sinus (white arrow).**

**Source: General University Hospital in Prague.**

did not reveal any residual infectious activity in the aortic valve and repeated transoesophageal echocardiography showed no persistence of the aortic valve vegetation. The patient was in a stable condition until September 2014 when a new 35 mm asymptomatic aneurysm of the ascending aorta, located anteriorly to the brachiocephalic trunk origin, was revealed by computed tomography (CT) angiography which was performed because of incipient dilation of aortic root and ascending aorta. (Fig. 2) The patient was admitted with fever to our department one week after the scan. *P. aeruginosa* positivity in blood culture was confirmed and no echocardiographic evidence of recurrent endocarditis was found. A repeated FDG-PET/CT scan detected significantly increased uptake of  $^{18}\text{F}$ -flourodeoxyglucose (FDG) within the aneurysm (Fig. 3). A re-assessment of the previous FDG-PET/CT scan with new 3D reconstruction showed that the aneurysm was already present in 2013, but without showing an increased FDG avidity. Nevertheless, this aneurysm was suspected as the cause of the recurrent sepsis. The diagnosis had proven difficult because of the atypical localization of the aneurysm and because there was no significant inflammatory activity between the episodes of septicaemia.

Despite the high risk of an open surgical procedure, the heart team recommended radical surgical management. After an explanation of the situation, the risks, and the therapeutic possibilities, the patient refused any invasive treatment. Complex conservative management was then introduced, together with a life-long antibiotic regime with ciprofloxacin 500 mg b.i.d. The patient's clinical condition quickly stabilized and it was possible to discharge him while on oral antibiotic therapy combined with continual complex conservative management. During follow-up, the patient has been stable with a good quality

of life and no residual inflammatory laboratory and clinical signs and no findings suggestive of a recurrent endocarditis on transthoracic echocardiography. According to the desire of the patient, no control CT or FDG-PET/CT angiography was performed. While receiving the continuous antibiotic therapy the patient had an uneventful outcome till June 2016 when he died because of heart failure resulting from a post-traumatic complication after a left acetabular fracture.

## Discussion

Infectious aneurysm of the aorta is a rare but serious condition, first described by Sir W. Osler in 1885 as a mycotic aneurysm due to its morphology [1]. An aneurysm is defined as a vascular dilation greater than 1.5 times the normal diameter of the adjacent healthy arterial segment. The historic term mycotic is slightly misleading, as infectious aneurysms are more commonly of bacterial than fungal origin.

Infectious aneurysm can be used as a description of both a primary infection of a native vessel causing aneurysmal dilation and a secondary infection of an already existing aneurysm.

Nowadays, this disease is still associated with many diagnostic and therapeutic challenges. The presence of infection in aortic aneurysm is a rare condition (incidence of 0.5–2% of all aortic aneurysms) associated with a significant increase in morbidity and mortality [2–8].

The aetiology of infectious aneurysm can be exogenous or endogenous, and according to the Wilson's classification of vascular infection is divided into four categories [9]:

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